

CSCI-B657

Final Project: Chess Board Recognition

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Part 1: Detection of squares in chess board

1. The first phase of our project involves detecting if the given image is a chess board or not and extract the required 64 squares from it.
Basically we want to extract the chess board from the image which helps in detecting the cross lines more accurately and filter out the lines that are not cross lines.
2. We first convert the image to a grayscale image and then reduce it to a binary image. This way we segment the chess board and remove the background details.
We then detect the edges using Canny's edge detection followed by Hough transform to detect the straight lines. We follow the below algorithm closely -
 - 1) After Hough, each line is processed to obtain left, right, top and bottom mask.
 - 2) Left mask is a binary image that has value '1' for all positions that lie to the right(below) of every line having positive slope.
 - 3) Likewise right, top and bottom mask are calculated.
 - 4) AND operation on these 4 masks will get the mask of the chess board.
3. We wanted to first try out the above steps using matlab to confirm if things are working as expected. We collected around 10 images of chess board and we achieved some results but not very accurate(code uploaded in git).
But we are planning to re-implement this using CImg library since we are familiar with most of the algorithms.

Pending tasks:

1. Implement the above steps using CImg library.
2. Start with step 2 which involves detection of pawns in chess board.
3. Calculate the accuracy of correctly detected pieces.